

**WHAT IS CLAIMED IS:**

1. A transcutaneous sensor insertion set, comprising:  
a mounting base adapted for mounting onto a patient's skin,  
said mounting base having an upwardly open channel formed therein;  
a flexible sensor having a proximal segment seated within said  
channel and a distal segment protruding from said mounting base with at  
least one sensor electrode thereon;  
a retainer cap mounted on said mounting base to close said  
channel for retaining said sensor proximal segment within said channel;  
and  
an insertion needle extending through said retainer cap and  
mounting base, said insertion needle defining means engageable with at  
least a portion of said sensor distal segment for transcutaneously placing  
said sensor distal segment and for subcutaneously placing said at least  
one electrode when said mounting base is placed against a patient's skin,  
said insertion needle being withdrawable from said sensor and said  
mounting base and retainer cap.

2. The transcutaneous sensor insertion set of claim 1 wherein  
said means for transcutaneously placing said sensor distal segment  
comprises a longitudinally extending slot formed along one side of said  
insert needle, said sensor distal segment and a portion of said sensor  
proximal segment being slidably carried by said insertion needle, and said  
insertion needle being slidably withdrawable therefrom.

3. The transcutaneous sensor insertion set of claim 1 wherein  
said retainer cap includes means for snap fit mounting onto said  
mounting base.

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4. The transcutaneous sensor insertion set of claim 1 wherein said retainer cap and said mounting base are constructed from molded plastic.

5. The transcutaneous sensor insertion set of claim 1 wherein said retainer cap includes means for frictionally capturing said sensor proximal segment within said channel.

6. The transcutaneous sensor insertion set of claim 1 wherein said channel is formed on said mounting base to extend angularly forwardly and downwardly from a front end of said mounting base, whereby said sensor distal segment protrudes forwardly and downwardly from said mounting base.

7. The transcutaneous sensor insertion set of claim 1 further including a protective cannula having said sensor distal segment and at least a portion of said sensor proximal segment received therein, said retainer cap engaging said cannula to retain said sensor proximal segment within said channel.

8. The transcutaneous sensor insertion set of claim 7 wherein said retainer cap includes means for snap fit mounting onto said mounting base.

9. The transcutaneous sensor insertion set of claim 7 wherein said retainer cap includes teeth means for engaging and retaining said cannula.

10. The transcutaneous sensor insertion set of claim 7 wherein said cannula includes means for slide-fit engagement with said insertion needle.

11. The transcutaneous sensor insertion of claim 7 wherein said cannula has at least one window formed therein in general alignment with said at least one sensor electrode to expose said sensor electrode through said window when said sensor is slidably received within said cannula.

12. The transcutaneous sensor insertion set of claim 1 wherein said sensor further includes a head formed generally at a proximal end thereof and including at least one conductive contact pad, said mounting base including a cable fitting adapted for releasable coupling to a cable connector, said cable fitting defining a seat for supporting and retaining said sensor head.

13. The transcutaneous sensor insertion set of claim 1 wherein said mounting base further includes snap fit latch means for releasable coupling to a cable connector.

14. The transcutaneous sensor insertion set of claim 1 further including a cable connector, said mounting base and said cable connector having releasably interengageable snap fit latch members.

15. The transcutaneous sensor insertion set of claim 1 further including an enlarged hub mounted at a rear end of said insertion needle, said hub and said mounting base including cooperatively interfitting alignment surfaces for guiding said insertion needle into assembly and withdrawal from said sensor.

16. The transcutaneous sensor insertion set of claim 15 wherein said cooperatively interfitting alignment surfaces further limit rotation of said insertion needle relative to said mounting base.

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17. The transcutaneous sensor insertion set of claim 15 wherein said hub comprises an enlarged rear wing for facilitated manual grasping, and a bifurcated nose defining said cooperatively interfitting alignment surfaces in combination with said mounting base.

18. The transcutaneous sensor insertion set of claim 17 wherein said retainer cap includes a raised segment sized to fit within said bifurcated nose of said hub.

19. The transcutaneous sensor insertion set of claim 1 wherein said sensor comprises a thin film sensor.

20. The transcutaneous sensor insertion set of claim 1 further including means for removable attachment of said mounting base to a patient's skin.

21. The transcutaneous sensor insertion set of claim 1 wherein said retainer cap has a needle port formed therein for sliding reception of said insertion needle.

22. A transcutaneous sensor insertion set, comprising:  
a mounting base adapted for mounting onto a patient's skin, said mounting base having an upwardly open channel formed therein, and further including a cable fitting generally at a rear end of said channel and adapted for releasable coupling with a cable connector, said channel extending from said cable fitting to a front end of said mounting base;

a flexible sensor having a head formed generally at a proximal end thereof, a proximal segment extending from said head and a distal segment having at least one sensor electrode thereon, said head including at least one contact pad conductively coupled to said electrode;

a protective cannula having said sensor distal segment and at

a portion of said sensor proximal segment received therein;

said sensor proximal segment and a portion of said cannula being seated within said channel formed in said mounting base, with said sensor distal segment and the remainder of said cannula protruding from said mounting base;

a retainer cap mounted on said mounting base to close said channel and to engage the cannula portion therein to capture and retain said cannula portion and said sensor proximal segment within said channel; and

an insertion needle extending through the assembled retainer cap and mounting base, said cannula including means for engagement with said needle upon insertion of said needle through the assembled retainer cap and mounting base, said insertion needle being slidably withdrawable from said cannula and from said retainer cap and mounting base.

23. The transcutaneous sensor insertion set of claim 22 wherein said insertion needle defines a longitudinally extending slot for slide-fit engagement with and for sliding withdrawal from said cannula.

24. The transcutaneous sensor insertion set of claim 22 wherein said retainer cap includes means for snap fit mounting onto said mounting base.

25. The transcutaneous sensor insertion set of claim 22 wherein said retainer cap and said mounting base are constructed from molded plastic.

26. The transcutaneous sensor insertion set of claim 22 wherein said retainer cap includes teeth means for engaging and retaining said cannula.

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27. The transcutaneous sensor insertion set of claim 22 wherein said channel is formed on said mounting base to extend angularly forwardly and downwardly from a front end of said mounting base, whereby said sensor distal segment protrudes forwardly and downwardly from said mounting base.

28. The transcutaneous sensor insertion set of claim 22 wherein said cable fitting includes a recessed seat for supporting and retaining said sensor head.

29. The transcutaneous sensor insertion set of claim 22 wherein said mounting base further includes snap fit latch means for releasable coupling to a cable connector.

30. The transcutaneous sensor insertion set of claim 22 further including a cable connector, said mounting base and said cable connector having releasably interengageable snap fit latch members.

31. The transcutaneous sensor insertion set of claim 22 further including an enlarged hub mounted at a rear end of said insertion needle, said hub and said mounting base including cooperatively interfitting alignment surfaces for guiding said insertion needle into assembly and withdrawal from said cannula.

32. The transcutaneous sensor insertion set of claim 31 wherein said cooperatively interfitting alignment surfaces further limit rotation of said insertion needle relative to said mounting base.

33. The transcutaneous sensor insertion set of claim 22 wherein said cable fitting comprises a tubular element having a central bore formed therein for pass through reception of a portion of said sensor proximal segment, said bore being generally coaxially aligned with said

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channel.

34. The transcutaneous sensor insertion set of claim 33 wherein said cable fitting includes a generally D-shaped key formed as a rearward extension of said tubular element, said key defining a recessed seat for receiving and supporting said sensor head.

35. The transcutaneous sensor insertion set of claim 34 wherein said recessed seat is formed at ramp angle relative to a central axis of said bore.

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